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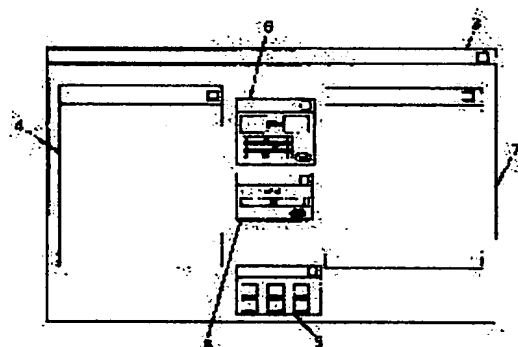
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## (54) COLOR ADJUSTMENT DEVICE

(57)Abstract:

**PROBLEM TO BE SOLVED:** To provide a color adjustment device by which lots of colors are easily adjusted.

**SOLUTION:** Color image data in an RGB color space are displayed in a before color adjustment image window 4. A color (designated color) is designated in the before-color-adjustment image window 4 on a screen of a color monitor 2, an RGB level is changed through the selection of a color pallet 5 or the like to adjust the color. The color adjustment parameter is obtained from the color before and after the designation. A coefficient setting window 8 is used to set a weight coefficient with respect to distance in the color space and a distance on an image plane and the color other than the designated color is adjusted from the distance and the set weight.



## LEGAL STATUS

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**CLAIMS**


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**[Claim(s)]**

**[Claim 1]** Color tone ready equipment which is characterized by providing the following and which specifies two or more colors in a color picture top, and performs color adjustment A means to input two or more color information and pixel information on a specified pixel on said color picture A means to input color tone ready information on color information which said plurality specified A means to input each weight which color information and pixel information of a specified pixel on said plurality contribute to color tone ready information from the outside A means to ask for a color tone ready backward color of each pixel on said color picture with reference to said weight from color tone ready information on said two or more assignment colors, pixel information, and color information and pixel information of each pixel on said color picture

**[Claim 2]** Color tone ready equipment which is characterized by providing the following and which specifies two or more colors in a color picture top, and performs color adjustment A means to input two or more color information and pixel information on a specified pixel on said color picture A means to input color tone ready information on color information which said plurality specified A means to input each weight which color information and pixel information of a specified pixel on said plurality contribute to color tone ready information from the outside Input two or more predetermined color information and two or more predetermined pixel information, and said weight is referred to. A means to search for color information on the color tone ready backward one of color tone ready information on said two or more assignment colors, pixel information, and said two or more predetermined color information and two or more predetermined pixel information to two or more of said predetermined color information, A means to change color information on the color tone ready backward ones of two or more of said predetermined color information into the first color space, and to memorize it for said every predetermined pixel information, A means to input pixel color information and pixel information of each pixel on said color picture, and to search for said pixel color information on the color tone ready backward one in said first color space from two or more said predetermined color information and said predetermined pixel information on the color tone ready backward one

**[Claim 3]** Color tone ready equipment given in two from claim 1 characterized by having a means to be color tone ready equipment which specifies two or more colors in a color picture top, and performs color adjustment, and to input color tone ready information as [ said whole color picture ] whole.

**[Claim 4]** Said color picture is color tone ready equipment given in two from claim 1 characterized by being a color static image.

**[Claim 5]** Said color picture is claim 1 characterized by being a color dynamic image, and color tone ready equipment according to claim 2.

**[Claim 6]** Said color picture is color tone ready equipment given in two from claim 1 characterized by being a three-dimensions color picture.

**[Claim 7]** Color tone ready equipment given in two from claim 1 characterized by inputting including an adjustable range of an assignment color in a color information input of said assignment color.

**[Claim 8]** A color space where said color information was defined is color tone ready equipment given in two from claim 1 characterized by being the color space which consists of a color space which consists of red, green, and the blue addition three primary colors or lightness, saturation, a color space that consists of a hue or lightness, and two chromaticities.

**[Claim 9]** Said first color space is color tone ready equipment according to claim 2 characterized by being the color space which consists of a color space which consists of red, green, and the blue addition three primary colors, cyanogen, a Magenta, a color space that consists of the subtraction three primary colors of yellow or cyanogen, a Magenta, yellow, and subtraction 4 color of black.

**[Claim 10]**  $\alpha = I$  [ when color tone ready parameters  $\alpha$ ,  $\beta$ , and  $\gamma$  of said assignment color make

said lightness of said assignment color  $l$ ,  $c$ ,  $h$ , and color tone ready backward, saturation, and a hue  $l'$ ,  $c'$ , and  $h'$  for lightness of said color tone ready forward assignment color, saturation, and a hue, respectively ]' — color tone ready equipment according to claim 8 characterized by to have a relation of  $1/\beta = c'/c$ ,  $\gamma = h'/h$ .  
 [Claim 11] A color tone ready parameter  $S_i$  which was able to obtain a color tone ready parameter  $S$  of color information on each pixel on said color tone ready backward color picture from color information on said assignment color ( $i = 1, \dots, n$ ) Color tone ready equipment according to claim 1 characterized by asking by the following interpolation type using a weighting factor  $k_i$  ( $i = 1, \dots, n$ ) to distance  $d_i$  ( $i = 1, \dots, n$ ) acquired from weight inputted from color information, pixel information, and said outside of said assignment color, and said assignment color.

$A = S_1 \text{ and } f(d_1)/k_1 + \dots + S_n - f(d_n)/k_n B = f(d_1)/k_1 + \dots + f(d_n)/k_n S = A/B$  — here —  $f(x)$  and  $(x \geq 0)$  — a weight

function [Claim 12] Color tone ready equipment according to claim 3 characterized by asking for a color tone ready parameter  $S$  of color information on each pixel of said color tone ready backward color picture by the following interpolation type from a weighting factor  $k_i$  ( $i = 1, \dots, n$ ) to a color tone ready parameter  $S_i$  of said assignment color ( $i = 1, \dots, n$ ), said distance  $d_i$  ( $i = 1, \dots, n$ ), and said assignment color.

$A = S_0 \text{ and } f(d_0)/k_0 + S_1 \text{ and } f(d_1)/k_1 + \dots + S_n - f(d_n)/k_n B = f(d_0)/k_0 + f(d_1)/k_1 + \dots + f(d_n)/k_n S = A/B$  — here —  $f(x)$  and  $(x \geq 0)$  — a weight function [Claim 13] A color tone ready parameter  $S$  of color information on each pixel of said color tone ready backward color picture From an adjustable range  $q_i$  ( $i = 1, \dots, n$ ) of a color tone ready parameter  $S_i$  of said assignment color ( $i = 1, \dots, n$ ), said distance  $d_i$  ( $i = 1, \dots, n$ ), a weighting factor  $k_i$  ( $i = 1, \dots, n$ ) to said assignment color, and said assignment color Color tone ready equipment according to claim 7 characterized by asking by the following interpolation type.

$A = S_1 \text{ and } f(q_1/d_1)/k_1 + \dots + S_n - f(q_n/d_n)/k_n B = f(q_1/d_1)/k_1 + \dots + f(q_n/d_n)/k_n S = A/B$  — here —  $f(x)$  and  $(x \geq 0)$  — a

weight function [Claim 14] A color tone ready parameter  $S$  of color information on said each color tone ready backward pixel A color tone ready parameter  $S_i$  of said assignment color ( $i = 1, \dots, n$ ) Color tone ready equipment according to claim 7 characterized by asking by the following interpolation type from an adjustable range  $q_i$  ( $i = 1, \dots, n$ ) of said distance  $d_i$  ( $i = 1, \dots, n$ ), a weighting factor  $k_i$  ( $i = 1, \dots, n$ ) to said assignment color, and said assignment color.

$A = S_0 + S_1 \text{ and } f(q_1/d_1)/k_1 + \dots + S_n - f(q_n/d_n)/k_n B = 1 + f(q_1/d_1)/k_1 + \dots + f(q_n/d_n)/k_n S = A/B$  — here —  $f(x)$  and  $(x \geq 0)$

— a weight function [Claim 15] Said weight function  $f(x)$  is color tone ready equipment of claim 11

characterized by being a monotonically decreasing function in  $x > 0$  to 14 publications.

[Claim 16] Said weight function  $f(x)$  is color tone ready equipment according to claim 15 characterized by being  $f(x) = 1 - x^2$ .

[Claim 17] Said pixel information is color tone ready equipment given in three from claim 1 characterized by being the coordinate information on a color picture plane.

[Claim 18] Said pixel information is color tone ready equipment according to claim 5 characterized by being coordinate information and time frame information of an image plane on said color dynamic image.

[Claim 19] Said pixel information is color tone ready equipment according to claim 6 characterized by being the coordinate information on image space of said three-dimensions color picture.

[Claim 20] Said pixel information is color tone ready equipment given in six from claim 5 characterized by being coordinate information and time frame information of image space on said color dynamic image.

[Claim 21] It is color tone ready equipment according to claim 2 which searches for color information on each pixel of said color tone ready backward color picture in said first color space using multi-dimension table interpolation from predetermined color information on said two or more color tone ready backward one memorized for said every predetermined pixel information, and is characterized by said predetermined color information on the color tone ready backward one being data of a multi-dimension table.

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[Translation done.]